FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	M04488	Client:	Alaskan Copper Works
Date Received:	08/13/09	Project:	PO M04488, F&BI 908089
Date Extracted:	08/13/09	Lab ID:	908089-01 10x
Date Analyzed:	08/14/09	Data File:	908089-01 10x.016
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	95	60	125
Indium	103	60	125
Holmium	103	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	402
Nickel	500
Copper	462
Zinc	59.7
Cadmium	<10
Lead	<10

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Alaskan Copper Works
Date Received:	Not Applicable	Project:	PO M04488, F&BI 908089
Date Extracted:	08/13/09	Lab ID:	I9-340 mb
Date Analyzed:	08/14/09	Data File:	I9-340 mb.015
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	100	60	125
Indium	101	60	125
Holmium	101	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	<1
Nickel	<1
Copper	<1
Zinc	<1
Cadmium	<1
Lead	<1

Date of Report: 08/18/09
Date Received: 08/13/09
Project: Metro Self Monitor, PO M04488, F&BI 908089

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 908061-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Chromium	ug/L (ppb)	<1	<1	nm	0-20
Nickel	ug/L (ppb)	1.43	1.51	5	0-20
Copper	ug/L (ppb)	13.7	13.4	2	0-20
Zinc	ug/L (ppb)	6.55	5.67	14	0-20
Cadmium	ug/L (ppb)	<1	<1	nm	0-20
Lead	ug/L (ppb)	<1	<1	nm	0-20

Laboratory Code: 908061-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Chromium	ug/L (ppb)	20	<1	98	50-150
Nickel	ug/L (ppb)	20	1.43	106	50-150
Copper	ug/L (ppb)	20	13.7	104 b	50-150
Zinc	ug/L (ppb)	50	6.55	102	50-150
Cadmium	ug/L (ppb)	5	<1	99	50-150
Lead	ug/L (ppb)	10	<1	99	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Chromium	ug/L (ppb)	20	102	70-130
Nickel	ug/L (ppb)	20	105	70-130
Copper	ug/L (ppb)	20	107	70-130
Zinc	ug/L (ppb)	50	101	70-130
Cadmium	ug/L (ppb)	5	103	70-130
Lead	ug/L (ppb)	10	101	70-130

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - The analyte indicated was found in the method blank. The result should be considered an estimate.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - The sample was extracted outside of holding time. Results should be considered estimates.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The pattern of peaks present is not indicative of diesel.

y - The pattern of peaks present is not indicative of motor oil.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

August 17, 2009

Mike Erdahl
Friedman & Bruya
3012 – 16th Avenue West
Seattle, WA 9819-2029

Client Project: 908089 PO# H-1952
ARI ID: PK51

Dear Mr. Erdahl:

Please find enclosed the original Chain of Custody record, sample receipt documentation, and analytical results for the project referenced above. Analytical Resources, Inc. accepted one water sample on August 13, 2009. Please refer to the enclosed Cooler Receipt Form for further details regarding sample receipt.

The sample was analyzed for Total Cyanide and Amenable Cyanide, on an expedited turnaround, as requested on the Chain of Custody.

The sample was detected at slightly above the Reporting Limit. The Replicate was not detected above the RL. The variation at this level, just around the RL, makes the Relative Percent Difference inapplicable. All other QC was within control, and the data was accepted.

Quality control analysis results are included for your review. Copies of the reports and all associated raw data will be kept on file electronically at ARI. If you have any questions or require additional information, please contact me at your convenience.

Respectfully,
ANALYTICAL RESOURCES, INC.

Eric Branson
Project Manager
(206) 695-6213
eric@arilabs.com
www.arilabs.com

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 Fax # (206) 283-5044

SUBCONTRACTER	
PROJECT NAME/NO.	PO #
908089	H-1952
REMARKS	
Please Email Results merdahl@friedmanandbruya.com	

Page # 1 of 1

TURNAROUND TIME

☐ Standard (2 Weeks)

☒ RUSH 8/14/09

Rush charges authorized by:

SAMPLE DISPOSAL

☐ Dispose after 30 days

☐ Return samples

☐ Will call with instructions

						ANALYSES REQUESTED										
Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	Oil and Grease	EPH	VPH	Nitrate	Sulfate	Alkalinity	Total Cyanide	Amenable Cyanide			Notes
M04488		8/13/09	1PM	W								X	X			

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Michael Erdahl	Friedman & Bruya	8/13/09	2:30 PM
Received by:	A. Volgardsen	ARI	8/13/09	16:46
Relinquished by:				
Received by:				

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Friedman & Bruya

Project Name: 908089

COC No(s): NA

Delivered by: Fed-Ex UPS (Courier) Hand Delivered Other:

Assigned ARI Job No: PK51

Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry): AMB

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#:

Cooler Accepted by: AV Date: 8/13/09 Time: 1646

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other:			BOX
Was sufficient ice used (if appropriate)?	NA	YES	(NO)
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	NA	(YES)	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO

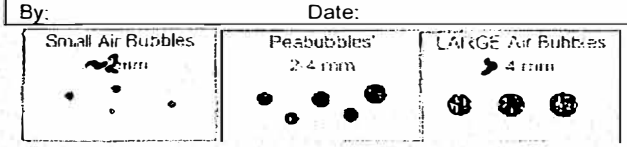
Samples Logged by: JP Date: 8/13/09 Time: 1655

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

PRESERVATION VERIFICATION 08/13/09

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **PK51**

Inquiry Number: NONE
Analysis Requested: 08/14/09
Contact: Erdahl, Michael
Client: Friedman & Bruya, Inc.
Logged by: JP
Sample Set Used: Yes-423
Validatable Package: No
Deliverables:

PC: Eric
VTSR: 08/14/09

Project #: 908089
Project:
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102 <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
09-19023 **PK51A**	M04488	F																1N	>12	6NNaOH 6844C	~2ml	8-13-09 17:15 at

Cyanides are unpreserved

– for Cl

– for S^2

PK51 : 00004

Checked By JP Date 8/13/09

SAMPLE RESULTS-CONVENTIONALS
PK51-Friedman & Bruya, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 08/17/09

Project: NA
Event: 908089
Date Sampled: 08/13/09
Date Received: 08/14/09

Client ID: MO4488
ARI ID: 09-19023 PK51A

Analyte	Date Batch	Method	Units	RL	Sample
Total Cyanide	08/14/09 081409#2	EPA 335.4	mg/L	0.005	0.007
Post Chlorination Cyanide	08/14/09 081409#1	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	08/14/09	EPA 335.1	mg/L	0.005	0.007

RL Analytical reporting limit
U Undetected at reported detection limit

MS/MSD RESULTS-CONVENTIONALS
PK51-Friedman & Bruya, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 08/17/09

Project: NA
Event: 908089
Date Sampled: 08/13/09
Date Received: 08/14/09

Analyte	Method	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: PK51A Client ID: MO4488							
Total Cyanide	EPA 335.4	08/14/09	mg/L	0.007	0.183	0.200	88.0%
Post Chlorination Cyanid	EPA 335.1	08/14/09	mg/L	< 0.005	0.094	0.100	94.0%

REPLICATE RESULTS-CONVENTIONALS
PK51-Friedman & Bruya, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 08/17/09

Project: NA
Event: 908089
Date Sampled: 08/13/09
Date Received: 08/14/09

Analyte	Method	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: PK51A Client ID: MO4488						
Total Cyanide	EPA 335.4	08/14/09	mg/L	0.007	< 0.005	NA
Post Chlorination Cyani	EPA 335.1	08/14/09	mg/L	< 0.005	< 0.005	NA

METHOD BLANK RESULTS-CONVENTIONALS
PK51-Friedman & Bruya, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 08/17/09

Project: NA
Event: 908089
Date Sampled: NA
Date Received: NA

Analyte	Method	Date	Units	Blank
Total Cyanide	EPA 335.4	08/14/09	mg/L	< 0.005 U
		08/14/09		< 0.005 U
Post Chlorination Cyanide	EPA 335.1	08/14/09	mg/L	< 0.005 U

STANDARD REFERENCE RESULTS-CONVENTIONALS
PK51-Friedman & Bruya, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 08/17/09

Project: NA
Event: 908089
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
Total Cyanide	EPA 335.4	08/14/09	mg/L	0.136	0.150	90.7%
ERA 11107		08/14/09		0.380	0.400	95.0%
Post Chlorination Cyanide	EPA 335.1	08/14/09	mg/L	0.095	0.100	95.0%

PK51 : 00009

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

August 18, 2009

DUPLICATE

INVOICE #09ACU0818-1

Accounts Payable
Alaskan Copper Works
628 South Hanford
Seattle, WA 98134

RE: Project Metro Self Monitor, PO M04488, F&BI 908089 - Results of testing requested by Gerry Thompson for material submitted on August 13, 2009.

1 sample analyzed for Total Chromium, Copper, Nickel and Zinc Cadmium and Lead by Method 200.8 @ $128 per sample	$ 128.00
Rush Charges (48 hr) 80% of $128.00	102.40
1 sample analyzed for Total Cyanide (expedited) by Method 335.2 @ $108 per sample	108.00
1 sample analyzed for Amenable Cyanide (expedited) by Method 335.1 @ $144 per sample	144.00
Amount Due	$ 482.40

FEDERAL TAX ID # (b) (6)

908089

SAMPLE CHAIN OF CUSTODY ME 8/13/09 AT 2

Send Report To Gene Thompson

Company ALASKAN COPPER WORKS

Address 628 S. Dawson St

City, State, ZIP Seattle WA 98134

Phone # 206-571-6033 Fax # 206-382-4309

SAMPLERS (signature)

PROJECT NAME/NO. metro Self monitor

PO # M04488

REMARKS

Page # ____ of ____

TURNAROUND TIME
- ☐ Standard (2 Weeks)
- ☒ RUSH 24 hrs

Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	Cu Cr Ni	Zn Cd Pb	Ag Total	Cu Amenable		Notes
M04488	01 A-D	8/13/09	1:00pm	H2O	4							X	X	X	X		

ANALYSES REQUESTED

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Gene Thompson	ACW	8/13/09	1:52pm
Received by:		HONEYWELL	FMI	8/13/09	
Relinquished by:					
Received by:					

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FORMS\COC\COC.DOC

Samples received at ____ °C

AKC-0005428

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
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August 18, 2009

Gerry Thompson, Project Manager
Alaskan Copper Works
628 South Hanford
Seattle, WA 98134

Dear Mr. Thompson:

Included are the results from the testing of material submitted on August 13, 2009 from the Metro Self Monitor, PO M04488, F&BI 908089 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
ACU0818R.DOC